

# Molybdenum TZM Alloy

## **1 PRODUCT AND SUPPLIER IDENTIFICATION**

**Product Name:** Molybdenum TZM Alloy - sheet, rod  
**Other:** Molybdenum-Titanium-Zirconium alloy

**Supplier:** Eagle Alloys Corporation  
178 West Park Court  
Talbott, TN 37877

**Telephone:** 423-586-8738  
**Fax:** 423-586-7456  
**Email:** [sales@eaglealloys.com](mailto:sales@eaglealloys.com)

**24 HOUR EMERGENCY ASSISTANCE:** CHEMTREC 800-424-9300

Recommended Uses: Scientific Research

## **2 HAZARDS IDENTIFICATION**

**GHS Classification (29 CFR 1910.1200):** Not classified as hazardous

**GHS Label Elements:**

**Signal Word:** N/A

**Hazard Statements:** N/A

**Precautionary Statements:** N/A

## **3 COMPOSITION/INFORMATION ON INGREDIENTS**

<b>Ingredient:</b>	<b>CAS#:</b>	<b>%:</b>	<b>EC#:</b>
Molybdenum	7439-98-7	99	231-107-2
Titanium	7429-32-6	0.4-0.55	231-142-3
Zirconium	7440-67-7	0.06-0.12	231-176-9

## **4 FIRST AID MEASURES**

**General Measures:** Under normal handling and use, exposure to solid forms of this material present few health hazards. Subsequent operations such as grinding, melting or welding may produce potentially hazardous dust or fumes which can be inhaled or come in contact with the skin or eyes.

**INHALATION:** Remove to fresh air, keep warm and quiet, give oxygen if breathing is difficult. Seek medical attention.

**INGESTION:** Rinse mouth with water. Do not induce vomiting. Seek medical attention. Never induce vomiting or give anything by mouth to an unconscious person.

**SKIN:** Remove contaminated clothing, brush material off skin, wash affected area with soap and water. Seek medical attention if symptoms develop or persist.

**EYES:** Flush eyes with lukewarm water, including under upper and lower eyelids, for at least 15 minutes. Seek medical attention if symptoms develop or persist.

**Most Important Symptoms/Effects, Acute and Delayed:** May cause irritation. See section 11 for more information.

**Indication of Immediate Medical Attention and Special Treatment:** No other relevant information available.

## Molybdenum TZM Alloy SAFETY DATA SHEET

### 5 FIREFIGHTING MEASURES

**Extinguishing Media:** Use suitable extinguishing agent for surrounding materials and type of fire.

**Unsuitable Extinguishing Media:** No information available.

**Specific Hazards Arising from the Material:** This product does not present fire or explosion hazards as shipped. Fine dust from processing may ignite if allowed to accumulate and subjected to an ignition source. May emit toxic metal oxide fumes under fire conditions.

**Special Protective Equipment and Precautions for Firefighters:** Full face, self-contained breathing apparatus and full protective clothing when necessary.

### 6 ACCIDENTAL RELEASE MEASURES

**Personal Precautions, Protective Equipment, and Emergency Procedures:** Wear appropriate respiratory and protective equipment specified in section 8. Avoid dust formation.

**Methods and Materials for Containment and Cleaning Up:** Sweep or scoop up. Place in appropriate waste disposal container.

**Environmental Precautions:** Do not allow to be released to the environment.

### 7 HANDLING AND STORAGE

**Precautions for Safe Handling:** Avoid creating dust. See section 8 for information on personal protection equipment.

**Conditions for Safe Storage:** Store in a cool, dry area. See section 10 for more information on incompatible materials.

### 8 EXPOSURE CONTROLS AND PERSONAL PROTECTION

**Exposure Limits: OSHA/PEL:**

Molybdenum 15 mg/m<sup>3</sup> (insoluble compounds, total dust)  
Titanium No exposure limit established  
Zirconium 5 mg/m<sup>3</sup>

**ACGIH/TLV:**

10 mg/m<sup>3</sup> (insoluble compounds, inhalable)  
No exposure limit established  
5 mg/m<sup>3</sup>

**Engineering Controls:** Ensure adequate ventilation to maintain exposures below occupational limits. Whenever possible the use of local exhaust ventilation or other engineering controls is the preferred method of controlling exposure to airborne dust and fume to meet established occupational exposure limits. Use good housekeeping and sanitation practices. Do not allow dusts to accumulate as they may present a fire hazard. Do not use tobacco or food in work area. Wash thoroughly before eating or smoking. Do not blow dust off clothing or skin with compressed air.

**Respiratory Protection:** If permissible levels are exceeded, use NIOSH approved dust respirator.

**Eye Protection:** Safety glasses

**Skin Protection:** Wear impermeable gloves, protective work clothing as necessary.

### 9 PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:**

**Form:** Solid in various forms

**Color:** Gray metallic

**Odor:** Odorless

**Odor Threshold:** Not determined

**pH:** N/A

**Melting Point:** 2610 °C

**Boiling Point:** No data

**Flash Point:** N/A

**Evaporation Rate:** N/A

**Flammability:** N/A

## Molybdenum TZM Alloy SAFETY DATA SHEET

**Upper Flammable Limit:** No data  
**Lower Flammable Limit:** No data  
**Vapor Pressure:** No data  
**Vapor Density:** N/A  
**Relative Density (Specific Gravity):** 10.18 g/cc  
**Solubility in H<sub>2</sub>O:** Insoluble  
**Partition Coefficient (n-octanol/water):** Not determined  
**Autoignition Temperature:** No data  
**Decomposition Temperature:** No data  
**Viscosity:** N/A

### 10 STABILITY AND REACTIVITY

**Reactivity:** No data

**Chemical Stability:** Stable under recommended storage conditions.

**Possibility of Hazardous Reactions:** None known

**Conditions to Avoid:** High temperatures in air; strong oxidation starting around 600 °C, sublimation of MoO<sub>3</sub> starting around 700 °C.

**Incompatible Materials:** Oxidizing agents, bromine trifluoride, chlorine trifluoride, fluorine, lead dioxide.

**Hazardous Decomposition Products:** Metal oxide fume.

### 11 TOXICOLOGICAL INFORMATION

**Likely Routes of Exposure:** Inhalation, skin, eyes. Product as shipped does not present an inhalation hazard; however subsequent operations may create dusts or fumes which could be inhaled.

**Symptoms of Exposure:** May cause irritation if dusts or fumes are inhaled or swallowed. Fines/dusts may irritate skin and eyes.

**Acute and Chronic Effects:**

Molybdenum: No data

Zirconium: Zirconium is generally considered to be physiologically inert.

Titanium: Titanium is generally considered to be physiologically inert.

**Acute Toxicity:** No data

**Carcinogenicity:** No components of this alloy have been identified by NTP or IARC as carcinogenic.

To the best of our knowledge the chemical, physical and toxicological characteristics of the substance are not fully known.

### 12 ECOLOGICAL INFORMATION

**Ecotoxicity:** No data

**Persistence and Degradability:** No data

**Bioaccumulative Potential:** No data

**Mobility in Soil:** No data

**Other Adverse Effects:** Do not allow material to be released to the environment without proper governmental permits. No further relevant information available.

### 13 DISPOSAL CONSIDERATIONS

**Waste Disposal Method:**

**Product:** Dispose of in accordance with Federal, State and Local regulations.

**Packaging:** Dispose of in accordance with Federal, State and Local regulations.

### 14 TRANSPORT INFORMATION

**Shipping Regulations:** Not regulated

## Molybdenum TZM Alloy SAFETY DATA SHEET

**UN Number:** N/A  
**UN Proper Shipping Name:** N/A  
**Transport Hazard Class:** N/A  
**Packing Group:** N/A  
**Marine Pollutant:** No

### **15 REGULATORY INFORMATION**

**TSCA Listed:** All components are listed.

**Regulation (EC) No 1272/2008 (CLP):** N/A

**Canada WHMIS Classification (CPR, SOR/88-66):** N/A

**HMIS Ratings: Health:** 0 **Flammability:** 0 **Physical:** 0

**NFPA Ratings: Health:** 0 **Flammability:** 0 **Reactivity:** 0

**Chemical Safety Assessment:** A chemical safety assessment has not been carried out.

### **16 OTHER INFORMATION**

The information contained in this document is based on the state of our knowledge at the time of publication and is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Eagle Alloys Corporation makes no representation, warranty, or guarantee of any kind with respect to the information contained in this document or any use of the product based on this information. Eagle Alloys Corporation shall not be held liable for any damages resulting from handling or from contact with the above product. Users should satisfy themselves that they have all current data relevant to their particular use.

**Prepared by:** Eagle Alloys Corporation

**Revised/Reviewed:** November 2014

**24 HOUR EMERGENCY ASSISTANCE:** CHEMTREC 800-424-9300